

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: YOICHI IIHOSHI ET AL
Serial No.: To Be Assigned Group Art Unit: To Be Assigned
Filed: February 27, 2002 Examiner: To Be Assigned
Title: DIAGNOSIS APPARATUS FOR INTERNAL COMBUSTION
ENGINE

PRELIMINARY AMENDMENT

Box Non-Fee Amendment
Commissioner for Patents
Washington, D.C. 20231

Sir:

Please enter the following amendments to the specification, claims and abstract prior to the examination of the application.

IN THE CLAIMS:

Please AMEND Claims 3-6, 10-13 and 15 as follows:

3. (AMENDED) An internal combustion engine diagnosis apparatus according to claim 1, wherein said internal combustion engine comprises a temperature detector for detecting temperature of said HC adsorption catalyst, and degradation of said HC adsorption catalyst is diagnosed based on a detected value of said temperature detector.

4. (AMENDED) An internal combustion engine diagnosis apparatus according to claim 1, wherein a temperature gradient during evaporating of

water adsorbed to said HC adsorption catalyst is calculated, and said temperature gradient is compared with a preset diagnosis threshold, and if said temperature gradient is smaller than said diagnosis threshold, it is judged that said HC adsorption catalyst is degraded.

5. (AMENDED) An internal combustion engine diagnosis apparatus according to claim 1, wherein a temperature gradient after evaporating of water adsorbed to said HC adsorption catalyst is calculated, and said temperature gradient is compared with a preset diagnosis threshold, and if said temperature gradient is larger than said diagnosis threshold, it is judged that said HC adsorption catalyst is degraded.

6. (AMENDED) An internal combustion engine diagnosis apparatus according to claim 1, wherein a temperature gradient during evaporating of water adsorbed to said HC adsorption catalyst and a temperature gradient after evaporating of water adsorbed to said HC adsorption catalyst are calculated, and a ratio of said two temperature gradients is compared with a preset diagnosis threshold, and if said temperature gradient ratio is larger than said diagnosis threshold, it is judged that said HC adsorption catalyst is degraded.

10. (AMENDED) An internal combustion engine diagnosis apparatus according to claim 7, wherein if said desorbing time period exceeds a preset time, judgment of degradation of said HC adsorption catalyst is prohibited.

11. (AMENDED) An internal combustion engine diagnosis apparatus according to claim 7, wherein if a cumulative value or a maximum value of a flow rate of air flowing into said internal combustion engine during said HC desorbing time period exceeds a preset value, judgment of degradation of said HC adsorption catalyst is prohibited.

12. (AMENDED) An internal combustion engine diagnosis apparatus according to claim 6, wherein said diagnosis threshold is corrected based on a flow rate of air flowing into said internal combustion engine during said HC desorbing time period.

13. (AMENDED) An internal combustion engine diagnosis apparatus according to claim 4, wherein said diagnosis threshold is corrected based on a flow rate of air flowing into said internal combustion engine.

15. (AMENDED) An internal combustion engine diagnosis apparatus according to claim 11, wherein said internal combustion engine comprises an air

flow rate measurement instrument for measuring or estimating a flow rate of air flowing into said internal combustion engine.

(A copy of the marked-up version of amended Claims 3-6, 10-13 and 15 are attached to this Preliminary Amendment).

Please ADD Claims 16-20 as follows:

16. (NEW) An internal combustion engine diagnosis apparatus according to claim 2, wherein said internal combustion engine comprises a temperature detector for detecting temperature of said HC adsorption catalyst, and degradation of said HC adsorption catalyst is diagnosed based on a detected value of said temperature detector.

17. (NEW) An internal combustion engine diagnosis apparatus according to claim 16, wherein a temperature gradient during evaporating of water adsorbed to said HC adsorption catalyst is calculated, and said temperature gradient is compared with a preset diagnosis threshold, and if said temperature gradient is smaller than said diagnosis threshold, it is judged that said HC adsorption catalyst is degraded.

18. (NEW) An internal combustion engine diagnosis apparatus according to claim 16, wherein a temperature gradient after evaporating of water adsorbed to said HC adsorption catalyst is calculated, and said temperature

gradient is compared with a preset diagnosis threshold, and if said temperature gradient is larger than said diagnosis threshold, it is judged that said HC adsorption catalyst is degraded.

19. (NEW) An internal combustion engine diagnosis apparatus according to claim 16, wherein a temperature gradient during evaporating of water adsorbed to said HC adsorption catalyst and a temperature gradient after evaporating of water adsorbed to said HC adsorption catalyst are calculated, and a ratio of said two temperature gradients is compared with a preset diagnosis threshold, and if said temperature gradient ratio is larger than said diagnosis threshold, it is judged that said HC adsorption catalyst is degraded.

20. (NEW) An internal combustion engine diagnosis apparatus according to claim 7, wherein said diagnosis threshold is corrected based on a flow rate of air flowing into said internal combustion engine during said HC desorbing time period.

REMARKS

Entry of the amendments to the specification, claims and abstract before examination of the application is respectfully requested. These claims have been amended to remove multiple dependencies/These claims patentably define over the art of record.

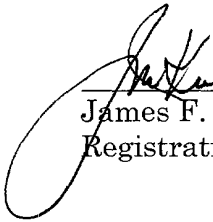
Docket: 381NP/50962

If there are any questions regarding this Preliminary Amendment or this application in general, a telephone call to the undersigned would be appreciated since this should expedite the prosecution of the application for all concerned.

It is respectfully requested that, if necessary to effect a timely response, this paper be considered as a Petition for an Extension of Time sufficient to effect a timely response and shortages in other fees, be charged, or any overpayment in fees be credited, to the Account of Evenson, McKeown, Edwards & Lenahan, P.L.L.C., Deposit Account No. 05-1323 (Docket #).

Respectfully submitted,

Date: February 27, 2002



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VERSION WITH MARKINGS TO SHOW CHANGES MADE

Please AMEND Claims 3-6, 10-13 and 15 as follows:

3. (AMENDED) An internal combustion engine diagnosis apparatus according to [any one of] claim[s] 1 [and 2], wherein said internal combustion engine comprises a temperature detector for detecting temperature of said HC adsorption catalyst, and degradation of said HC adsorption catalyst is diagnosed based on a detected value of said temperature detector.

4. (AMENDED) An internal combustion engine diagnosis apparatus according to [any one of] claim[s] 1 [to 3], wherein a temperature gradient during evaporating of water adsorbed to said HC adsorption catalyst is calculated, and said temperature gradient is compared with a preset diagnosis threshold, and if said temperature gradient is smaller than said diagnosis threshold, it is judged that said HC adsorption catalyst is degraded.

5. (AMENDED) An internal combustion engine diagnosis apparatus according to [any one of] claim[s] 1 [to 3], wherein a temperature gradient after evaporating of water adsorbed to said HC adsorption catalyst is calculated, and said temperature gradient is compared with a preset diagnosis threshold, and if said temperature gradient is larger than said diagnosis threshold, it is judged that said HC adsorption catalyst is degraded.

6. (AMENDED) An internal combustion engine diagnosis apparatus according to [any one of] claim[s] 1 [to 3], wherein a temperature gradient during evaporating of water adsorbed to said HC adsorption catalyst and a temperature gradient after evaporating of water adsorbed to said HC adsorption catalyst are calculated, and a ratio of said two temperature gradients is compared with a preset diagnosis threshold, and if said temperature gradient ratio is larger than said diagnosis threshold, it is judged that said HC adsorption catalyst is degraded.

10. (AMENDED) An internal combustion engine diagnosis apparatus according to [any one of] claim[s] 7 [and 8], wherein if said desorbing time period exceeds a preset time, judgment of degradation of said HC adsorption catalyst is prohibited.

11. (AMENDED) An internal combustion engine diagnosis apparatus according to [any one of] claim[s] 7 [and 8], wherein if a cumulative value or a maximum value of a flow rate of air flowing into said internal combustion engine during said HC desorbing time period exceeds a preset value, judgment of degradation of said HC adsorption catalyst is prohibited.

12. (AMENDED) An internal combustion engine diagnosis apparatus according to [any one of] claim[s] 6 [to 9], wherein said diagnosis threshold is

corrected based on a flow rate of air flowing into said internal combustion engine during said HC desorbing time period.

13. (AMENDED) An internal combustion engine diagnosis apparatus according to [any one of] claim[s] 4 [to 6], wherein said diagnosis threshold is corrected based on a flow rate of air flowing into said internal combustion engine.

15. (AMENDED) An internal combustion engine diagnosis apparatus according to [any one of] claim[s] 11 [to 14], wherein said internal combustion engine comprises an air flow rate measurement instrument for measuring or estimating a flow rate of air flowing into said internal combustion engine.